of the plates, and the retention of four pairs of tail-spines. Stegosaurus, which attained a length of about 20 ft., had relatively small and feeble teeth, which appear to indicate that it fed on succulent plants. The structure of the feet suggests that these reptiles inhabited low, swampy tracts rather than uplands; and there is good reason to believe that the members of the genus are descended from bipedal dinosaurs specially adapted for locomotion on land.

Until quite recently remains of man-like apes were almost unknown from the Indian Siwaliks, the only specimens being a canine collected by Falconer and Cautley, and a palate from the Punjab described in 1879 by Mr. Lydekker as Palæopithecus. During the past few years the collectors employed by the Geological Survey have, however, brought together a considerable series of teeth and fragmentary jaws of these and other Primates. These form the subject of an illustrated article contributed by Dr. G. E. Pilgrim to the February number of the Records of the Geological Survey of India (vol. xlv., pp. 1–74). Among the remains of man-like apes, a considerable number are referred to the European genus Dryopithecus, of which the author recognises three Siwalik species. These specimens include one exhibiting two of the upper molars *in situ*, which were previously unknown. A separate tooth, characterised by the roughness of its enamel, is described as a new genus, under the name of *Palaeosimia rugosidens*.

The greatest interest attaches, however, to specimens described as *Sivapithecus indicus*, and referred to the family Hominidæ. This genus and species were originally described on the evidence of a single tooth, but the author now proposes to take as the type part of a lower jaw with several teeth; this, of course, being totally unjustifiable. The author gives an ideal restoration of the whole mandible, but it is somewhat difficult to realise all the evidence on which it is based. A special feature of the restoration is the extreme shortness of the symphysis, which is found elsewhere (save in the Hominidæ) only in gibbons. The author is at great pains to show that Sivapithecus is generically distinct from Palæopithecus, but as the latter is definitely known only by the palate, his arguments do not appear absolutely conclusive, especially when it is borne in mind that the occurrence of a number of types of ape-like creatures in the Siwaliks is unlikely.

The author concludes his article with observations on the evolution of the Anthropoidea, in the course of which it is suggested that Sivapithecus should take its place as a side-branch from the main stem which gave rise to man himself. On the other hand, the Piltdown Eoanthropus, which Dr. Smith Woodward considers to be a direct ancestor of man, is thrown altogether out of the line of human ancestry While the article is full of interest, further consideration is advisable before the author's views are accepted in their entirety.

In an earlier paper in the same serial (vol. xliv., pp. 265–79) Dr. Pilgrim describes and figures a number of Siwalik teeth referable to the creodont genus Dissopsalis, named by himself in 1910. The genus is regarded as forming the summit of a branch of the Hyænodontidæ, running nearly parallel to the one culminating in Hyænodon and Pterodon. It is also shown that a Siwalik tooth described by the present writer as *Hyaenodon indicus* is really inseparable from *Hyotherium sindiense*, named by him at an earlier date. Later on in the same issue Dr. Pilgrim points out that the name Progiraffa proposed by himself for a Siwalik giraffe-like ruminant, has to give place to Propalæomeryx of the present writer.

R. L.

THE UNITED STATES BUREAU OF STANDARDS.

In his report for 1913–14, Dr. Stratton, the director of the U.S. Bureau of Standards, shows how very extensive and varied is the work carried on at the Bureau. During the past few years its growth has been exceptionally rapid, and increased accommodation is still asked for. Much of the work carried on is strictly technical and includes tests on paper, paints, and varnishes, the shrinkage of wools, the properties of lime and cements, and the study of ceramic glazes. In the electrical division an important electrolysis survey was conducted in Springfield, Massachusetts, and useful information obtained with regard to the bonding of tracks, etc.

The unfortunate accident to the *Titanic* centred attention on possible methods of detecting the near presence of icebergs, and assistants of the bureau conducted experiments on two naval vessels. The general conclusions reached are that the temperature variations in parts of the ocean far removed from ice are often as great and as sudden as in the immediate neighbourhood of icebergs, and that it is not possible to draw positive conclusions as to the absence or presence of icebergs from the temperature variation of sea-water. An attempt was also made to detect by means of submarine telephones, the submarine echoes from the submerged portion of a large iceberg. Sound waves were produced by striking the ship's bell under water. The experiments were not completed owing to lack of time and facilities, but the results obtained merit further trials.

Researches of a strictly scientific nature are numerous. One of considerable interest is the determination of standard wave-lengths throughout the entire spectrum. This is being carried out in accordance with the recommendations of the International Solar Union, and the results, while needed mainly by men of science, will also be of value in the industries. For example, the spectroscopic analysis of steel and other substances cannot be successfully undertaken until the characteristics of the spectra of the constituents are more accurately observed.

Another optical research deals with the transmission of glass for the ultra-violet rays, mainly with a view of determining their fitness for spectacle-making.

An interesting innovation is the establishment of standards of radiation in the form of incandescent lamps. In these standards the intensity of the radiant energy per unit area at unit distance from the lamp, has been established in absolute value. A long-felt want has thus been supplied.

In the chemical department work is in progress on the methods and standards employed in volumetric analysis. The final scheme for this research was prepared after criticisms and suggestions had been received from about 150 experienced chemists. A beginning has been made with the study of acidimetry and the subject of indicators. The quality of chemical reagents on the market is also being investigated. It has become the practice of many well-known dealers to attach labels to the bottles containing reagents, setting forth the nature and amount of the impurities. In many cases it has been found that the labels do not state the truth, and as a consequence some action will probably be taken. One suggestion is that the bureau shall purchase material and assume all the duties of bottling and sale.

In the division of metallurgy, among other interesting results are included the melting points of various metals. The results given are:—Nickel, 1452° C.; cobalt, 1478°; iron, 1530°, manganese, 1260°; chromium, 1520°; vanadium, 1720°; and titanium,

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1795°. It is stated that accurate measurements of the melting point can be made with the micropyrometer on samples as minute as 0·001 milligram. The micropyrometer has also been employed to measure the monochromatic emissivity of microscopic samples. This constant has been determined for some twenty elements. It is expected to determine the melting points and emissivities of all the available refractory elements and of numerous oxides.

One of the most important recommendations of the director is to establish a radio-laboratory at the bureau. The importance of wireless telegraphy to the United States Government is pointed out, and a grant of 10,000*l.* for the construction of such a laboratory is asked for. For maintenance an additional 2000*l.* is required.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

ABERYSTWYTH.—Prof. Alexander Findlay has been appointed Thomson lecturer in chemistry for the session 1915–16 in the United Free Church College, Aberdeen.

CAMBRIDGE.—The Linacre lecture will be delivered by Prof. E. H. Starling, in the anatomy lecture-room, at 8 p.m., Thursday, May 6, on the governor mechanism of the heart. The Rede lecture will be delivered by Dr. Norman Moore, at 5 p.m. of the same day, in the Senate House, on St. Bartholomew's Hospital in peace and war.

In view of the difficulties of the present financial situation, the Special Board for Biology and Geology has decided to allocate only such sums of money from the Gordon Wigan Fund as are necessary to prevent the extinction of research work already in progress. The grants made are: 10*l.* to Prof. Hughes, for research among the Pliocene deposits of the Cambridge district; 40*l.* to Prof. Punnett, to ensure that the Botanic Garden Syndicate will continue to offer special facilities for plant-breeding experiments; and 21*l.* to Mr. H. Scott, curator in entomology, for the care and development of the collections of insects.

SHEFFIELD.—Sir Joseph Jonas has given the University 5000*l.* to found, endow, and equip a laboratory, in connection with the applied science department, for testing metals, minerals, and similar substances, especially those involved in the production and manufacture of steel.

LADY HUGGINS, who died on March 24, leaving unsettled estate valued at 12,586*l.* gross, with net personality 12,109*l.*, made the following bequests, among others:—A sum not exceeding 1000*l.* to the Bedford College for Women (University of London); 500*l.*, and, if her estate is sufficient, a further sum of 500*l.* for the erection of a memorial in St. Paul's Cathedral to the memory of her husband; 1000*l.*, and, if her estate is sufficient, a further sum of 1000*l.* to the City of London School, Victoria Embankment, for the endowment of a scholarship for the study of astronomy, tenable at Cambridge, to be called the "Sir William Huggins" Scholarship; and a sum of not more than 300*l.* for finishing, editing, and illustrating the book on which she was engaged, being the life of her husband. The residue of the estate, if any, is also left to the City of London School.

WE learn from *Science* that Princeton University has received from Mrs. W. C. Osborn 25,000*l.* to establish the Dodge professorship of medieval history, and 20,000*l.* from an anonymous donor to endow a professorship of economics. Our contemporary also states that the Schools of Mines, Engineering, and Chemistry of Columbia University have received an anonymous gift of 6000*l.*, to be applied to the reconstruction and new equipment of the laboratories of quantitative, organic, and engineering chemistry in Havemeyer Hall; that a gift of 4000*l.* is announced from Mrs. S. W. Bridgham, daughter of a trustee of Columbia University from 1860 to 1903; and that Mr. G. W. Brackenridge has given to the University of Texas his yacht *Navidad,* valued at 20,000*l.*, to be assigned to the biological department of the institution. A preliminary survey of the Texas coast is to be made in the *Navidad,* starting from Port Lavaca.

THE ninth annual report, that for 1914, of the Apprenticeship and Skilled Employment Association, shows that in common with other bodies dependent for their support on voluntary contributions from the public, the association has suffered already financially as a result of the war, and would welcome an addition to its income. The work of the association has continued on its now familiar lines. Interesting tables are provided in the report classifying according to trades the numbers of boys and girls placed in employment by the various London committees. During the year 1914 the total number of boys placed was 532, and of these 60 went into office and clerical work, 47 took up mechanical engineering, 41 scientific instrument making, 40 electrical engineering (including wiring), and 34 motor work. Of the 333 girls who were found employment, 93 took up dressmaking, 34 office and clerical work, and 29 machining. The remaining girls were distributed among thirty-four different trades. Full particulars of the work of the association can be obtained from the offices, 53 Denison House, Vauxhall Bridge Road, S.W.

THE Benares Hindu University Bill was introduced in the Viceroy's Legislative Council at Delhi on March 22 by Sir Harcourt Butler, the vice-president, and the introduction of the Bill was carried *nem. con.* During the course of his speech, which is reported in the *Pioneer Mail* of March 26, Sir Harcourt Butler said:—"The main features of this University will be, first, that it will be a teaching and residential university; secondly, that while it will be open to all castes and creeds it will insist upon religious instruction for Hindus; and, thirdly, that it will be conducted and managed by the Hindu community and almost entirely by non-officials." The University is to be an All-India University. It is incorporated for the teaching of all knowledge, but will commence with five faculties of arts, science, law, Oriental studies, and theology. Many of the promoters desired to add a faculty of technology, and this desire has the full sympathy of Sir Harcourt Butler. The Governor-General will be Lord Rector, and the Lieutenant-Governor of the United Provinces of Agra and Oudh will be Visitor, of the University. The governing body will be a numerous and very representative Court, with an executive body in a council of not more than thirty members, of whom five will be members of the Senate. The academic body will be the Senate, consisting of not fewer than fifty members, with an executive body in the Syndicate. The Senate will have entire charge of the organisation of instruction in the University, and the constituent colleges' curriculum and examination and discipline of students and the conferment of ordinary and honorary degrees. The following large subscriptions have already been received:—Maharana of Udaipur, 1½ lakhs; the Maharaja Holkar, 5 lakhs; the Maharaja of Jodhpur, 2 lakhs, with a grant in perpetuity of 2000 rupees per month: the Maharaja of Bikanir, one lakh, with a grant in perpetuity of 1000 rupees per month; the Maharaja of Kashmir, a grant in perpetuity of 1000 rupees a month; the Maha-

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